

MAINTENANCE OF AIRNET FLOW CONTROL PANELS

Purpose This Meteorology and Air Quality Group (MAQ) procedure describes the process for cleaning, repairing, and adjusting the flow meter control panels used in the AIRNET sampling stations.

Scope This procedure applies to the personnel assigned to perform repairs or adjustments to the flow meter control panels used in the AIRNET sampling stations.

In this procedure

Topic	See Page
General Information About This Procedure	2
Who Requires Training to This Procedure?	3
Cleaning and Repairing Control Panels	4
Records Resulting from This Procedure	4

Hazard Control Plan

The hazard evaluation associated with this work is documented in Attachment 1: Initial risk = **low**. Residual risk = **low**. Work permits required: none. First authorization review date is one year from group leader signature below; subsequent authorizations are on file in group office.

Signatures

Prepared by: _____ Jake Martinez, MAQ	Date: <u>7/24/02</u>
Approved by: _____ Craig Eberhart, AIRNET Project Leader	Date: <u>7/18/02</u>
Approved by: _____ Dave Fuehne, Rad-NESHAP Project Leader	Date: <u>7/24/02</u>
Approved by: _____ Terry Morgan, QA Officer	Date: <u>7/24/02</u>
Work authorized by: _____ Jean Dewart, MAQ Acting Group Leader	Date: <u>7/30/02</u>

09/30/02

CONTROLLED DOCUMENT

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General information about this procedure

Attachments This procedure has no attachments.

History of revision This table lists the revision history and effective dates of this procedure.

Revision	Date	Description of Changes
0	8/26/98	New document.
1	1/25/99	Added caution about hearing damage and rule for running pumps outside building at start of work day.
2	3/9/00	Added HCP as Attachment 1 and changed risks in HCP.
3	7/30/01	Added step about installation of air filter and changed required test time after rebuild.
4	8/19/02	Changed steps on use of new flow meters.

Who requires training to this procedure? The following personnel require training before implementing this procedure:

- individuals assigned to perform maintenance or repairs on AIRNET flow control panels

Training method The training method for this procedure is **on-the-job training** by a previously-trained individual and is documented in accordance with the procedure for training (MAQ-024).

References The following documents are referenced in this procedure:

- MAQ-024, "Personnel Training"
- MAQ-205, "Calibration of Air Sampling Stations"

Note Actions specified within this procedure, unless preceded with "should" or "may," are to be considered mandatory guidance (i.e., "shall").

Cleaning and repairing control panels

Background Flow control panels from the AIRNET stations are usually replaced completely when there are problems with a panel. These removed panels must be cleaned and repaired as described in this procedure.

Tools and equipment Collect the following tools and equipment:

- needle nose pliers
- screwdriver
- adjustable (crescent) wrench
- pipe thread compound
- drill with cutting bit
- Dow Corning high vacuum grease
- paper towels
- spray cleaner (e.g., Fantastic®)

Steps to clean and reassemble the control panels To clean and reassemble the control panels, perform the following steps:

Step	Action
1	In the hood, with the sash lowered below face level , blow out control panel with compressed air. Wipe down and clean with paper towels and cleaner.
2	Disconnect all hoses and blow through each with compressed air.
3	Replace any hoses as needed and reconnect with removed hose clamps. (Use hoses from NAPA stock number H1937.)
4	If a Dwyer flow meter is present, replace it with Matheson flow meter. To fit Matheson meters, it is necessary to enlarge opening with drill and cutting bit.
5	Remove the flow meter for the filter flow.
6	Replace pressure sensor 0.5" H ₂ O (activation vacuum) with 3" H ₂ O. When hooking up sensor, make sure vacuum hose is on "low" side (it's clearly labeled). Make sure wires are connected correctly (timer will not function if wires are crossed).
7	If stainless steel control valve is installed, replace with Matheson control valve.
8	Clean out control valve to silica gel side by taking valve apart using an adjustable wrench. Clean with spray cleaner. Lubricate o-ring with vacuum grease. Reassemble valve.

Steps continued on next page.

Cleaning and repairing control panels, continued

Step	Action
9	Remove large hex nut and inner spring from back of control panel.
10	Inspect O-ring and replace if cracked or nicked.
11	Use needle nose pliers to remove black carbon plug. Clean with spray cleaner. Lubricate with vacuum grease.
12	Inspect inside of opening for debris or dirt. Blow out with compressed air if necessary.
13	Reassemble by installing black carbon plug and spring and large hex nut.
14	Install air filter assembly (if not already installed) in the hose from the silica gel.
15	<p>Test and calibrate the control panel: Hook up the panel to appropriate filter and silica gel sample holders. Connect a pump and calibrate the flow through the sampler holders according to MAQ-205. Run the test for at <u>least 10 minutes</u>, then recheck the calibration.</p> <p>CAUTION: Operating the vacuum pumps inside the Cave for long periods may cause permanent hearing damage.</p> <p>Conduct long-term pump tests outdoors. Pumps may be operated <u>inside</u> the building only for a maximum of two minutes during work hours OR overnight. At the start of each work day, turn off any operating pumps and reconnect them outside the building, if needed.</p>
16	Mark or label the panel to indicate it has been cleaned and calibrated. Put refurbished panels in storage cabinet for future use as repair replacements.

Records resulting from this procedure

Records

There are no records generated as a result of this procedure.

HAZARD CONTROL PLAN

1. The work to be performed is described in this procedure.

“Maintenance of AIRNET Flow Control Panels”

2. Describe potential hazards associated with the work (use continuation page if needed).

Compressed air: blowing compressed air into eyes, ears, or mouth.

Dust particles into eyes from compressed air.

Use of hand tools: Minor scrapes or pinches from slippage of screwdrivers or pliers.

Potential hearing damage from operation of pumps inside building.

3. For each hazard, list the likelihood and severity, and the resulting initial risk level (before any work controls are applied, as determined according to LIR300-00-01, section 7.2)

Compressed air: improbable / moderate = minimal

Dust particles into eyes: occasional / moderate = low

Use of hand tools: occasional / moderate = low

Hearing damage: moderate/occasional = low

Overall *initial* risk: ☐ Minimal ☒ Low ☐ Medium ☐ High

4. Applicable Laboratory, facility, or activity operational requirements directly related to the work:



None



List:

Work Permits required?



No



List:

HAZARD CONTROL PLAN, continued

5. Describe how the hazards listed above will be mitigated (e.g., safety equipment, administrative controls, etc.):

The usual care and common sense in the use of hand tools and the use of compressed air will suffice for protection. Hand tools used in this procedure are simple and small. Compressed air nozzle is also a relatively small size and cannot easily cause harm. Air compressor is properly shielded and installed in a room away from work area. Air hose has been equipped with a "safety nozzle." Use of the compressed air will be inside a hood with a sash that can be lowered below eye level to prevent dirt and particles from getting into eyes.

Potential hearing damage: ESH-5 measured noise levels and found them to be below the level that requires hearing protection. Even though there is no acute hazard, there is a possible chronic hazard. Potential hearing damage from operation of pumps inside building is mitigated by administrative control which allows operation of pumps indoors for a maximum of two minutes. All long-term pump tests will be performed outdoors. Pumps may be operated indoors overnight, but must be turned off or moved outdoors at the beginning of each following work day. As an alternative, the acoustic-lined box may be placed over the pumps, but do not leave the pump running for long periods inside the box.

6. Knowledge, skills, abilities, and training necessary to safely perform this work (check one or both):



Group-level orientation (per MAQ-032) and training to this procedure.



Other → See training prerequisites on procedure page 3. Any additional describe here:

7. Any wastes and/or residual materials? (check one) ☒ None ☐ List:

8. Considering the administrative and engineering controls to be used, the *residual* risk level (as determined according to LIR300-00-01, section 7.3.3) is (check one):



Minimal



Low



Medium (requires approval by Division Director)

9. Emergency actions to take in event of control failures or abnormal operation (check one):



None



List:

Signature of preparer of this HCP: This HCP was prepared by a knowledgeable individual and reviewed in accordance with requirements in LIR 300-00-01 and LIR 300-00-02.

Preparer(s) signature(s)

Name(s) (print)

/Position

Date

Signature by group leader on procedure title page signifies authorization to perform work for personnel properly trained to this procedure. This authorization will be renewed annually and documented in MAQ records.

Controlled copies are considered authorized. Work will be performed to controlled copies only. This plan and procedure will be revised according to MAQ-022 and distributed according to MAQ-030.